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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/655,951	09/04/2003	George R. Cameron	3PD-M-8497 US	8894
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PATENT LAW GROUP LLP 2635 NORTH FIRST STREET SUITE 223 SAN JOSE, CA 95134			EXAMINER ALAM, SHAHID AL	
			ART UNIT 2162	PAPER NUMBER
			MAIL DATE 09/28/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

Application No.

10/655,951

Applicant(s)

CAMERON ET AL.

Examiner

Shahid Al Alam

Art Unit

2162

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 07 July 2007.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

  
**SHAHID ALAM**  
**PRIMARY EXAMINER**

### **DETAILED ACTION**

1. Claims 1 – 14 are pending in this Office action.
2. The request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for Continued Examination under 37 CFR 1.114, the fee set forth in 37 CFR 1.17(e) has been paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 7 July 2007 has been entered. An action on the RCE follows.

### ***Response to Arguments***

3. Applicant's arguments and amendment filed July 7, 2007 have been fully considered but they are not persuasive for the following reasons.

Applicant arguing that a snapshot is not a single file but a point-in-time image of a file system having multiple files (e.g., a volume). Hitz et al. never discloses that a file system (or a snapshot) can descend from another file system (or another snapshot) and Hitz et al. does not disclose a snapshot tree structure having a first snapshot that descends from a base volume and a second snapshot that descends from the first snapshot.

Examiner respectfully disagrees all of the allegations as argued. Examiner, in his previous office action, gave detail explanation of claimed limitation and pointed out exact locations in the cited prior art.

Examiner is entitled to give claim limitations their broadest reasonable interpretation in light of the specification. See MPEP 2111 [R-1]

#### Interpretation of Claims-Broadest Reasonable Interpretation

During patent examination, the pending claims must be 'given the broadest reasonable interpretation consistent with the specification.' Applicant always has the opportunity to amend the claims during prosecution and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified. In re Prater, 162 USPQ 541,550-51 (CCPA 1969).

In response to applicant's argument, Hitz's teachings of WAFL's primary distinguishing characteristic is **Snapshots, which are read-only copies of the entire file system** (multiple files, e.g., a volume). WAFL creates and deletes Snapshots automatically at prescheduled times, and it keeps up to 20 Snapshots on-line at once (copies of the original files) to provide easy access to old versions of files (see also Figures 2 and 3).

**Snapshots** use a copy-on-write technique to avoid duplicating disk blocks that **are the same in a Snapshot as in the active file system**. Only when blocks in the active file system are modified or removed do Snapshots containing those blocks begin to consume disk space.

Users can access Snapshots through NFS to recover files that they have accidentally changed or removed, and **system administrators can use Snapshots to create backups (copies of the files, i.e. first and/or second files) safely from a running system**.

In response to applicant's argument that Hitz's teachings of the WAFL system, where the WAFL file system is a tree of blocks with the root inode similar to Applicant's tree structure, which describes the inode file, at the top, and meta-data files and regular files underneath (see Figures 1 and 2).

For the above reasons, Examiner believed that rejection of the last Office action was proper.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 – 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Dave Hitz et al. (File System Design for an NFS File Server Appliance).

With respect to claim 1, Hitz teaches a computer readable medium for a data storage device encoded with a snapshot tree structure and code for managing the snapshot tree structure to provide point-in-time back-ups of a base volume (Figure 2), the snapshot tree structure comprises:

a first branch (Figure 3C), comprising:

the base volume storing a current user data (page 5, Introduction, paragraph 5);  
a first read-only snapshot descending from the base volume (Figure 4 and corresponding text), the first read-only snapshot being created at a first time, the first read-only snapshot storing a first data of the base volume at the first time before the first data is modified in the base volume (Figure 3b, paragraph 3.4; create new snapshot by making duplicate copy of the root inode); and

a second read-only snapshot descending from the first snapshot, the second read-only snapshot being created at a second time earlier than the first time, the second read-only snapshot storing a second data of the base volume at the second time before the second data is modified in the base volume (Figure 4 and corresponding text; contents are written to a new location); and

instructions to retrieve data from the snapshot tree structure and transmitting the retrieved data to a host device (Snapshots use a copy-on-write technique to avoid duplicating disk blocks that are the same in a Snapshot as in the active file system. System administrators can use Snapshots to create backups safely from a running system. The write-anywhere design enables the copy-on-write technique used by Snapshots. For Snapshots to work, WAFL must be able to write all new data, including meta-data, to new locations on disk, instead of overwriting the old data.

To move a file from one directory to another, the file system must update the contents and inodes of both the source and target directories. WAFL receives requests only from the NFS client code of other systems. NFS client code converts file system

requests into a regular pattern of network requests, and it filters out error cases before they reach the server (pages 6, 9 and 19).

As to claim 2, a second branch, comprising a first read-write snapshot descending from one of the first and the second read-only snapshots (see Figure 4).

As to claim 3, the second branch further comprises a third read-only snapshot descending from the first read-write snapshot, the third read-only snapshot being created at a third time, the third read-only snapshot storing a third data of the first read-write snapshot at the third time before the third data is modified in the first read-write snapshot (see Figure 4; written to a new location up to the root of the tree).

As to claim 4, third branch, comprising a second read-write snapshot descending from the third read-only snapshot (see Figure 4).

As to claim 5, the third branch further comprises a fourth read-only snapshot descending from the second read-write snapshot, the fourth read-only snapshot being created at a fourth time, the fourth read-only snapshot storing a fourth data of the second read-write snapshot at the fourth time before the fourth data is modified in the read read-write snapshot (see Figure 4; written to a new location up to the root of the tree).

With respect to claim 6, in addition to the rejection of claim 1, Hitz further teaches inserting the second read-only snapshot between the base volume and the first read-only snapshot, wherein the first read-only snapshot now descends from the second read-only snapshot (see Figure 4 and corresponding text).

Subject matter of claims 7 – 10 are rejected in the analysis above in claims 1 – 5 and these claims are rejected on that basis.

With respect to claim 11, Hitz teaches a method for retrieving a point-in-time backup of a base volume (Figure 2) by reading a value of a data block from a snapshot tree structure having a base volume, a first snapshot descending from the base volume, and a second snapshot descending from the first snapshot (Figure 4 and corresponding text), the method comprising:

- searching for the data block in the second snapshot;

- if the data block is not found in the second snapshot:

- following a link in the second snapshot to the first snapshot;

- searching for the data block in the first snapshot (see Figures 2, 3b, 3c and 4 and corresponding texts).

Subject matter of claims 12 – 14 are rejected in the analysis above in claims 1 – 5 and these claims are rejected on that basis.




Art Unit: 2162

**Conclusion**

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shahid Al Alam whose telephone number is (571) 272-4030. The examiner can normally be reached on Monday-Thursday 8:00 A.M.- 4:00 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E. Breene can be reached on (571) 272-4107. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Shahid Al Alam  
Primary Examiner  
Art Unit 2162

September 25, 2007